

NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

November 6, 2012

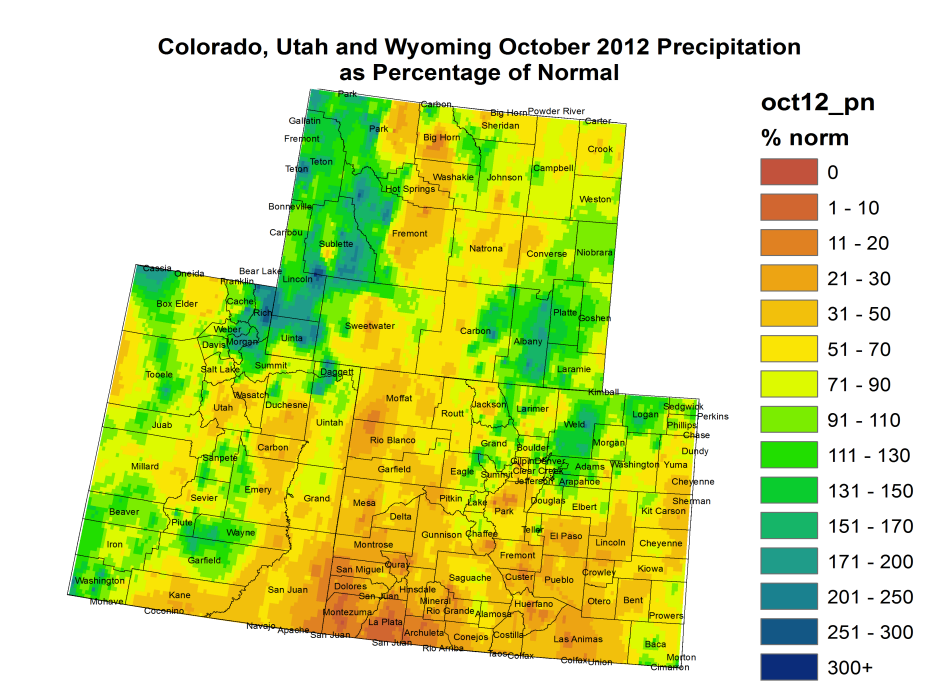


Fig. 1: October precipitation as a percent of average.

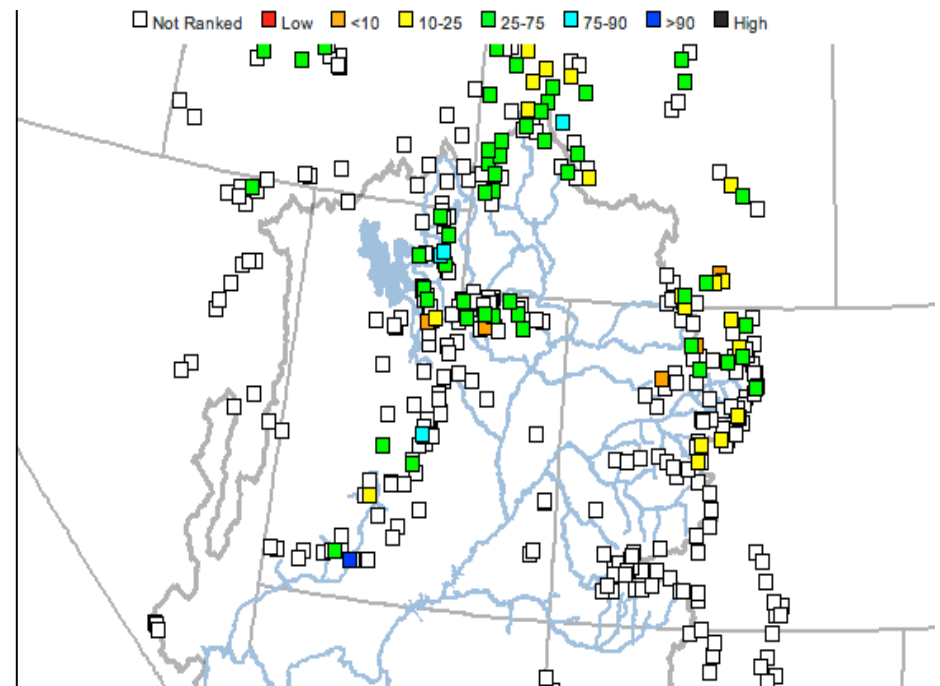


Fig. 2: SNOTEL snow water equivalent percentiles as of November 6th (product by Colorado Basin River Forecast Center).

Precipitation

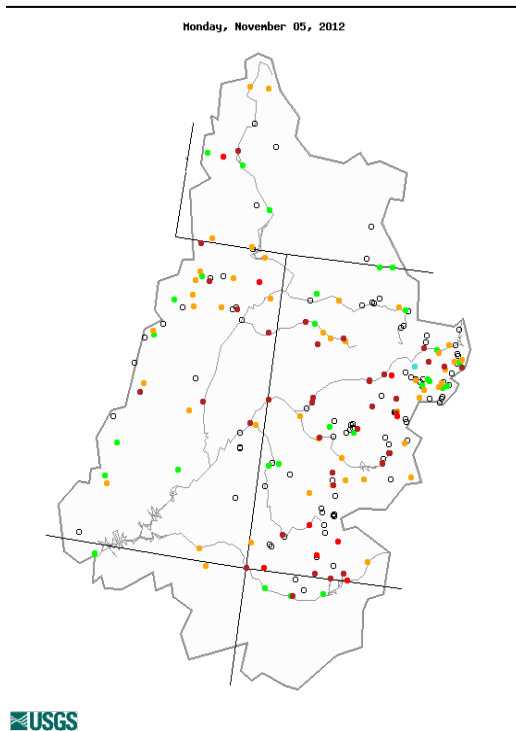
For the month of October, most of the Upper Colorado River Basin (UCRB) received below average precipitation (Fig. 1). Southwest Colorado saw between 10% and 50% of average precipitation for the month. Some isolated areas in the northern CO mountains received near average precipitation. Northern Utah and western Wyoming received near to above average precipitation for the month (with some areas seeing over 200% of average moisture). East of the UCRB, northeast CO received near average precipitation for October while southeast CO and the San Luis Valley received below average precipitation. Last week, the UCRB and the rest of CO saw little to no precipitation.

About half of the SNOTEL sites around the basin have started accumulating snowpack since the beginning of the water year (Fig. 2). White boxes denote stations with no snowpack at this time. Very little to no snow has begun accumulating in the southern portion of the basin. Many of the northern sites have accumulated snow in the near normal range, while a few sites in central CO are showing below normal snowpack for this time of year.

Streamflow

As of November 4th, about 26% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) to above normal 7-day average streamflows (Fig. 3). About 35% percent of the gages in the basin are recording much below normal or low (i.e. lowest on record) streamflows, and only one gage recorded above normal flows. Much below normal flows are found scattered throughout the basin. It is important to note that with baseflows dominating during this time of year, small changes in flows can lead to large percentile changes.

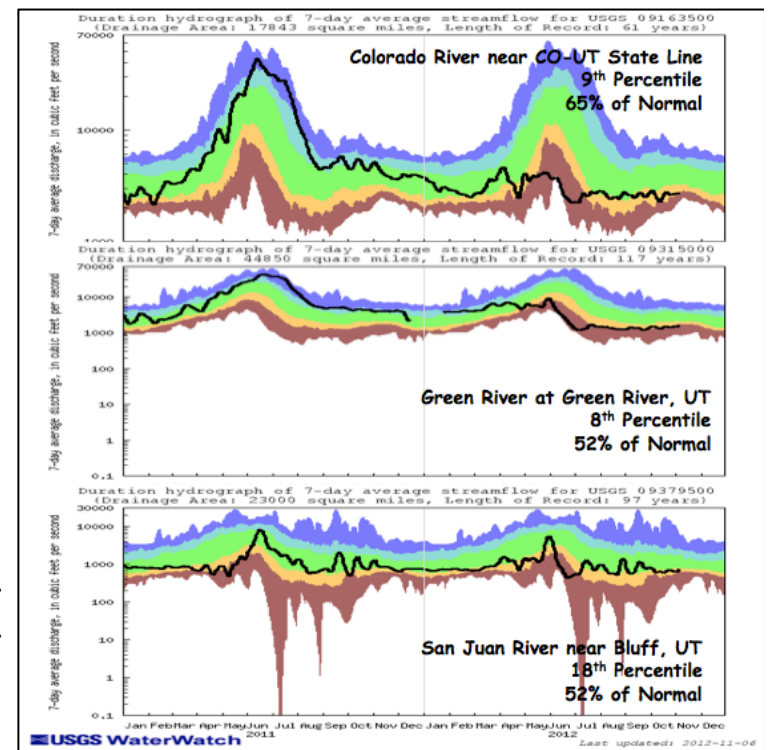
Flows on two of the three key gages across the basin are in the much below normal range (Fig. 4). Flows on the Colorado River near the CO-UT state line fell from below normal to much below normal and is now at the 9th percentile, and flows on the Green River at Green River, UT are at the 8th percentile. Flows on the San Juan River near Bluff, UT have stayed nearly steady for the past few weeks and are currently at the 18th percentile.



Explanation - Percentile classes							
●	●	●	●	●	●	●	○
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

Fig. 3: 7-day average discharge compared to historical discharge for November 5th.

Fig. 4: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).



Water Supply and Demand

Last week most of the UCRB experienced warmer than average temperatures. The northern part of the basin saw temperatures 6 to 8 degrees above average while the rest of the basin experienced temperatures 2 to 6 degrees above average. East of the basin, the rest of CO also saw warmer than average temperatures with the far eastern plains seeing temperatures 6 to 10 degrees above normal. The VIC soil moisture model shows extremely dry soils through most of WY, with soil dryness below the 20th percentile in northeast UT and northwest CO (Fig. 5). Deteriorating soil moisture conditions are showing up over southwest CO. Dry soils also show up in southeast CO with near normal soil moisture in north-central CO and in the San Luis Valley in southern CO.

For the month of October, all the major reservoirs in the UCRB saw a decrease in storage volumes, which is normal for this time of year. Lake Granby, Navajo, Dillon, and McPhee reservoirs saw larger decreases than normal while Lake Powell and Flaming Gorge saw smaller decreases than what is normal for this time of year. Most of the reservoirs in the basin are between 60% and 85% of their November averages. Blue Mesa is the lowest, at 55% of its average November storage volume, and Flaming Gorge is the highest, at 99% of average.

Precipitation Forecast

Dry conditions and above average temperatures will persist across the UCRB for the majority of the week as an area of high pressure slowly migrates across the region. Changes begin on Friday as a robust Pacific trough approaches the area from the west. Moisture streaming northward ahead of this feature will provide fuel for isolated showers and thunderstorms beginning on Friday afternoon. Main energy associated with the trough will swing across the basin on Saturday, bringing widespread snowfall to the UCRB throughout the weekend. While most areas can expect to see at least a few showers, precipitation will be the greatest over the southern and central CO mountains where liquid accumulations of 0.50 will be common by Sunday morning. Elsewhere, expect lighter accumulations of around 0.10 inches of liquid throughout the duration of the storm in the lower elevations of western CO and eastern UT (Fig. 6). The trough exits the area on Sunday, leaving behind slowly moderating temperatures and mostly dry conditions for the beginning of next week.

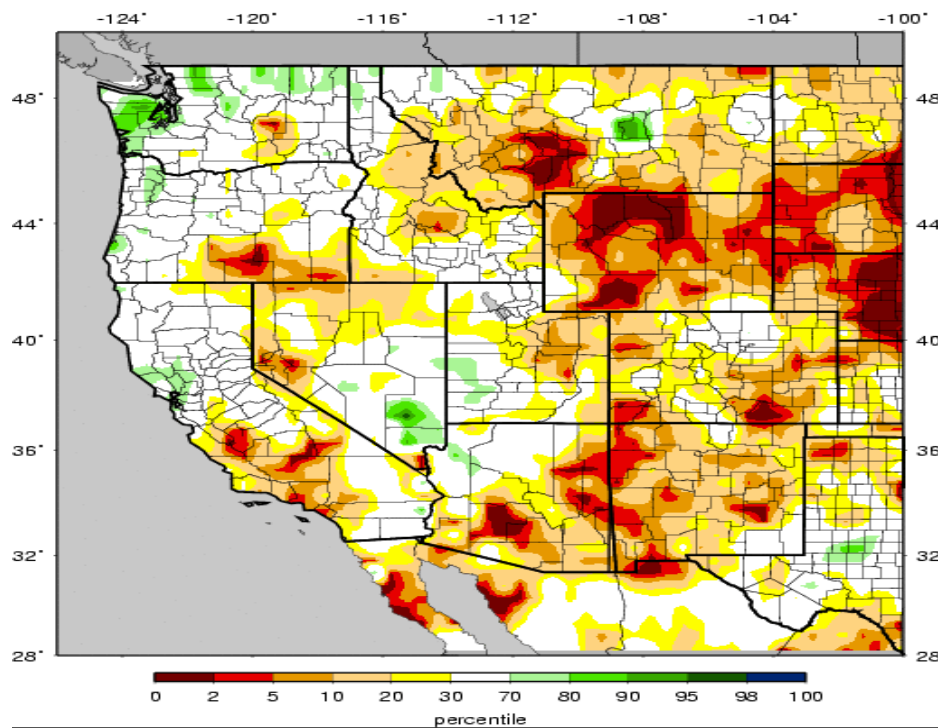


Fig. 5: VIC modeled soil moisture percentiles for the western U.S. as of November 4th.

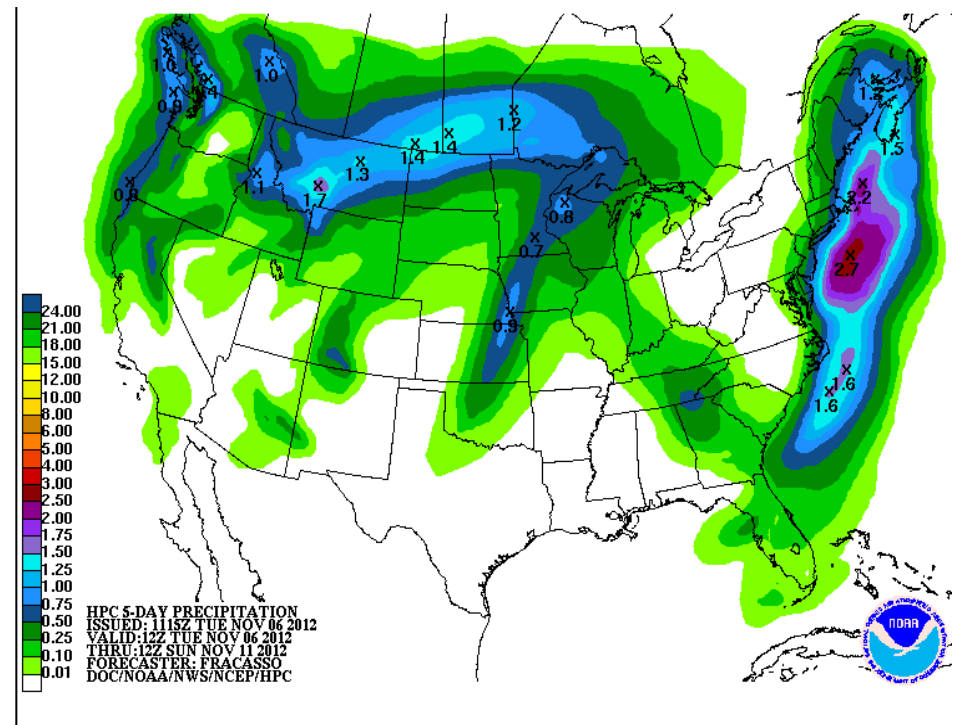


Fig. 6: Quantitative precipitation forecast (QPF) by the Hydrologic Prediction Center out to 12UTC Sunday.

Drought and Water Discussion

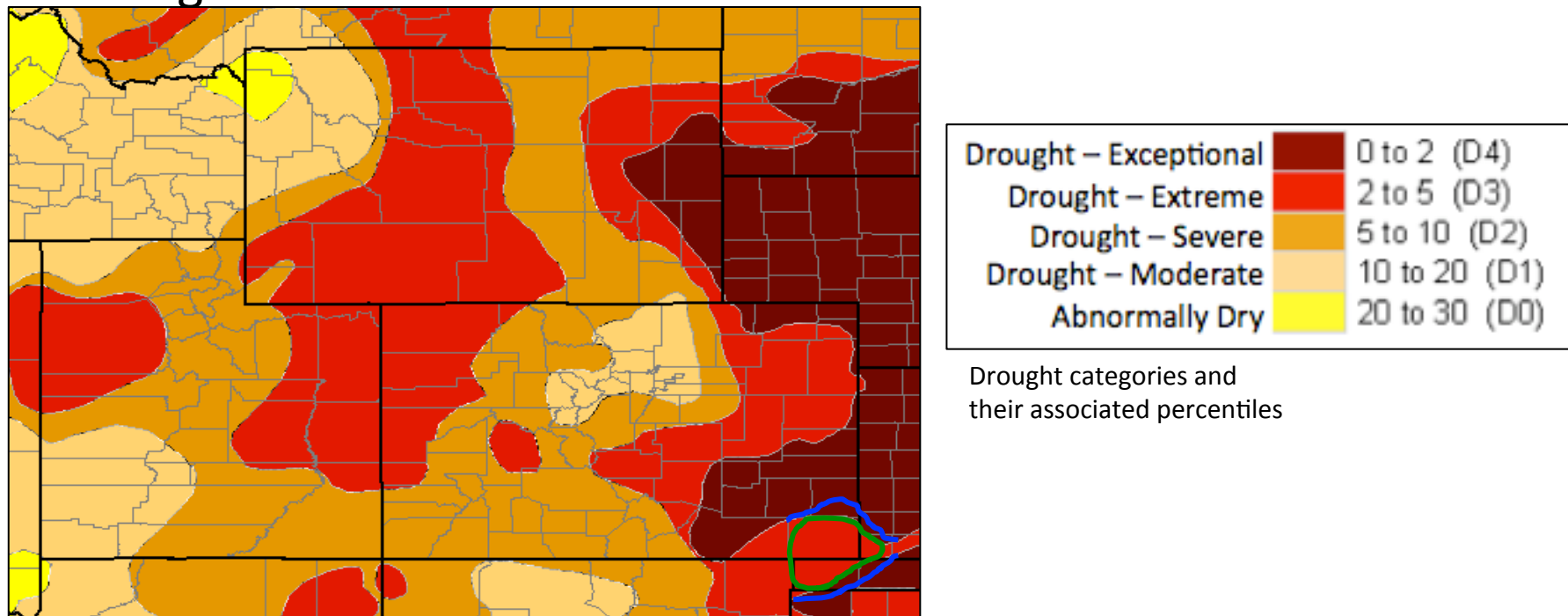


Fig. 7: October 30th release of U.S. Drought Monitor for the UCRB.

UCRB: Little to no precipitation accumulated in the basin over the past week, so no improvements are recommended at this time. Status quo is recommended for the current depiction of the basin in the current U.S. Drought Monitor (USDM) map (Fig. 7).

Eastern CO: There is a current concern regarding the accuracy of the drought depiction in Baca County in southeast CO. Standardized precipitation indices (SPIs) on 30- and 60-day timescales are positive for the county and surrounding counties in Kansas and Oklahoma. Mid- to long-range timescale SPIs range between -1 and +1. Baca County has reported very few impacts over the past 6 months, and VIC soil moisture conditions in that isolated area are near normal. No indicators point to D3. We would recommend an improvement to D2 for the county (with a sharp gradient to other counties as these conditions are not widespread) and would also recommend that the current USDM author consider this improvement to bleed over into the neighboring KS and OK counties (Fig. 7, green shape for D2 and blue lines for D3).